Chapter 4: The Internal Environment of Organisms

Cells in Action

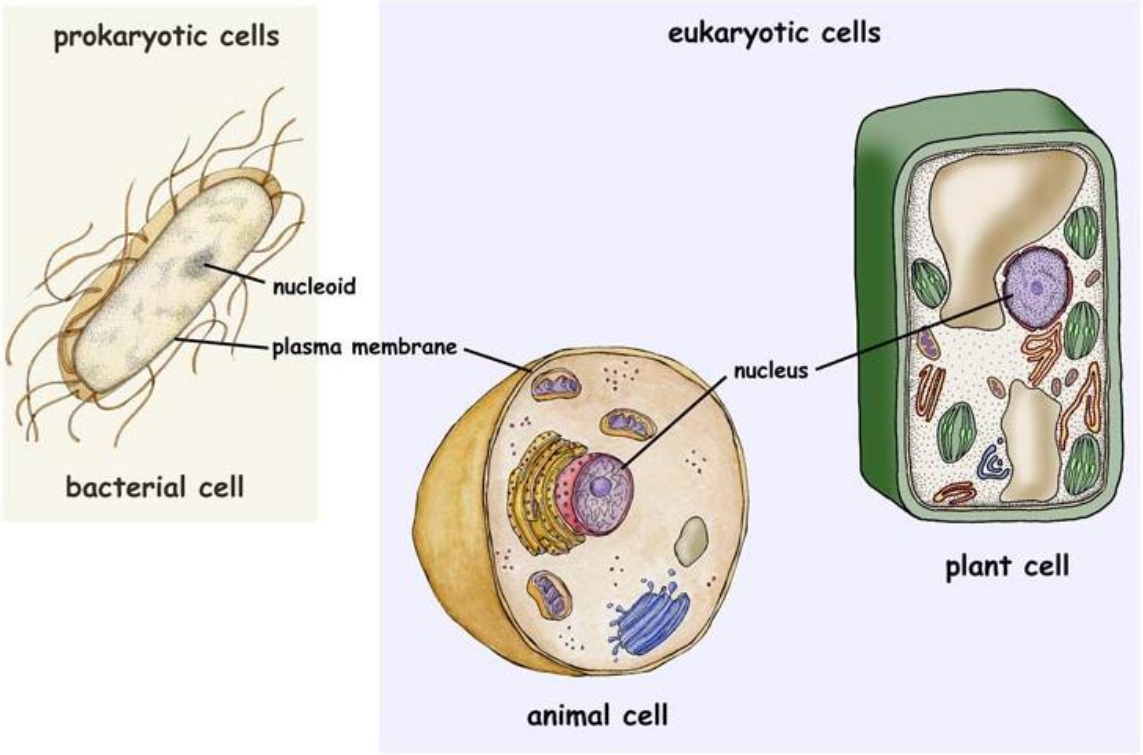
Compartments

Date

Pages 224-226 Page #

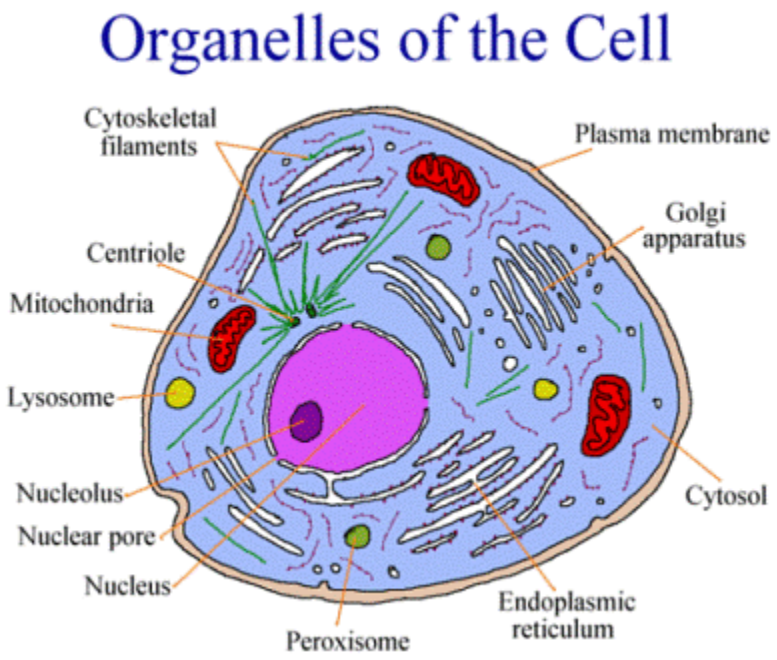
http://www.brainpop.com/science/cellularlifeandgenetics/cells/

Homeostasis	maintaining an internal balance for the brain and other organs to function The conditions on the inside of the body must always stay the same no matter the conditions of the outside environment
Cell theory	1. All living things are made of one or more cells 2. The cell is the basic unit of structure and function in living things 3. All cells come from preexisting cells
Cell	the building blocks of all living things



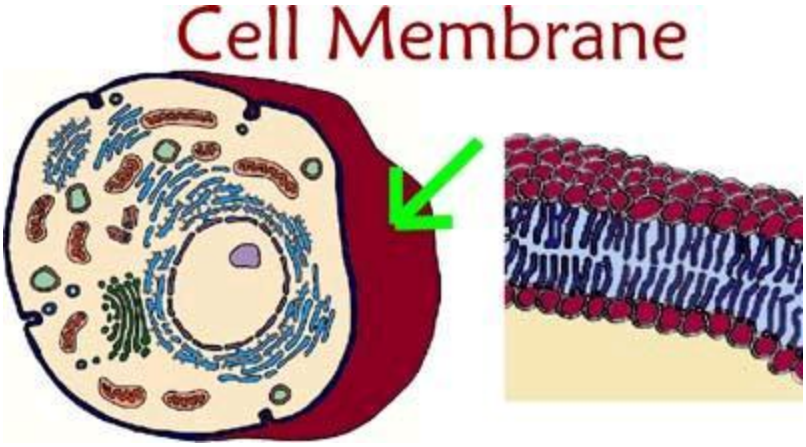
Prokaryotic cell	a cell with no nucleus and no membrane-bound organelles Found in small, unicellular organisms (bacteria)
Eukaryotic cell	a cell with a nucleus and membrane-bound organelles Found in larger, multicellular organisms (plants, animals, fungi, protists)

Organelle a small structure in a cell that has a specific job



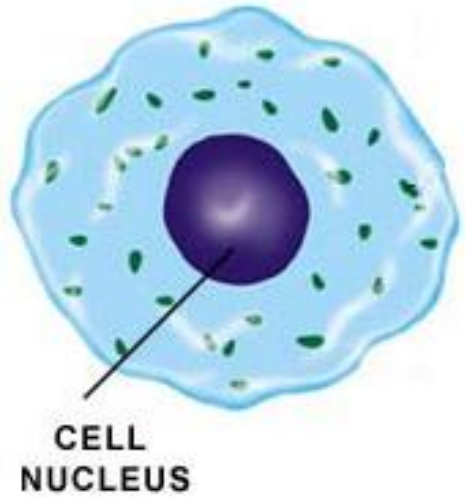
Cell membrane a semipermeable membrane that separates the inside of the cell from the outside

It controls what moves in an out of the cell

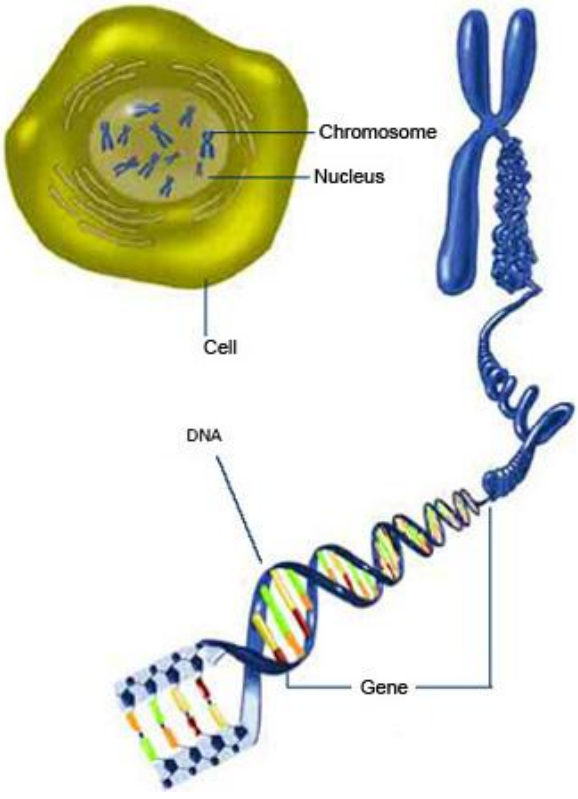


http://www.brainpop.com/science/cellularlifeandgenetics/cellstructures/

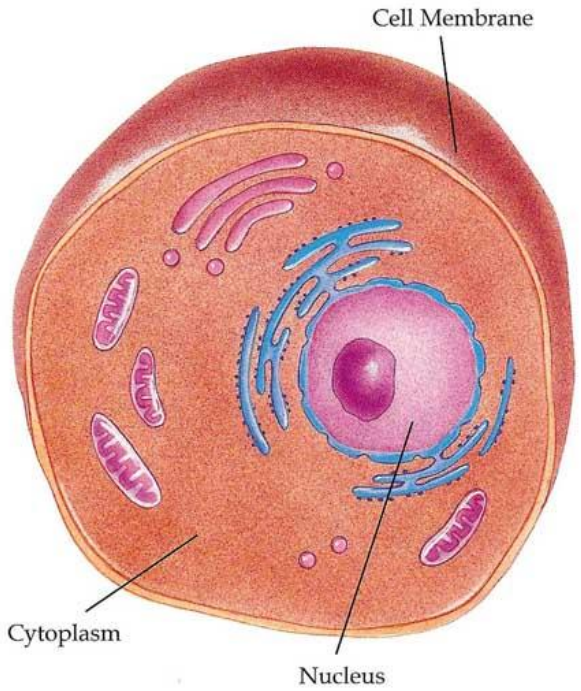
Nucleus the control center of the cell that has DNA



DNA The genetic plans for an organism

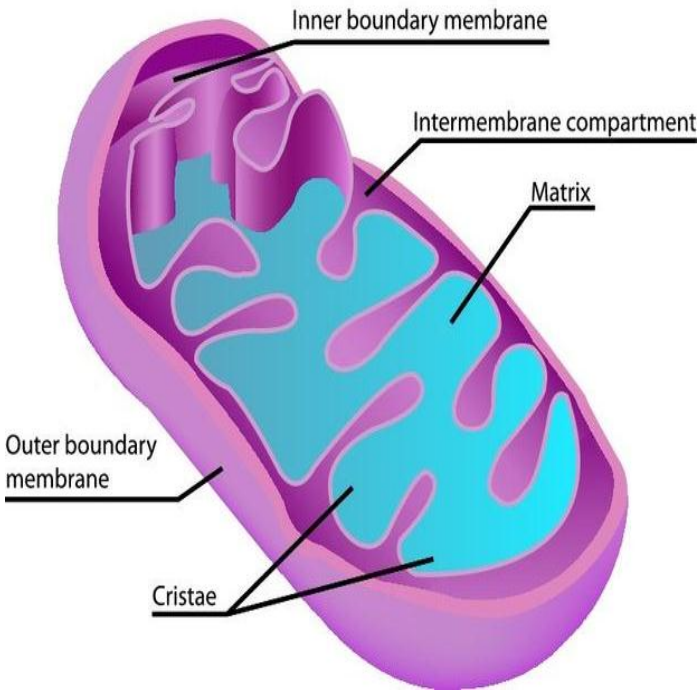


Cytoplasm gel-like substance that supports the organelles

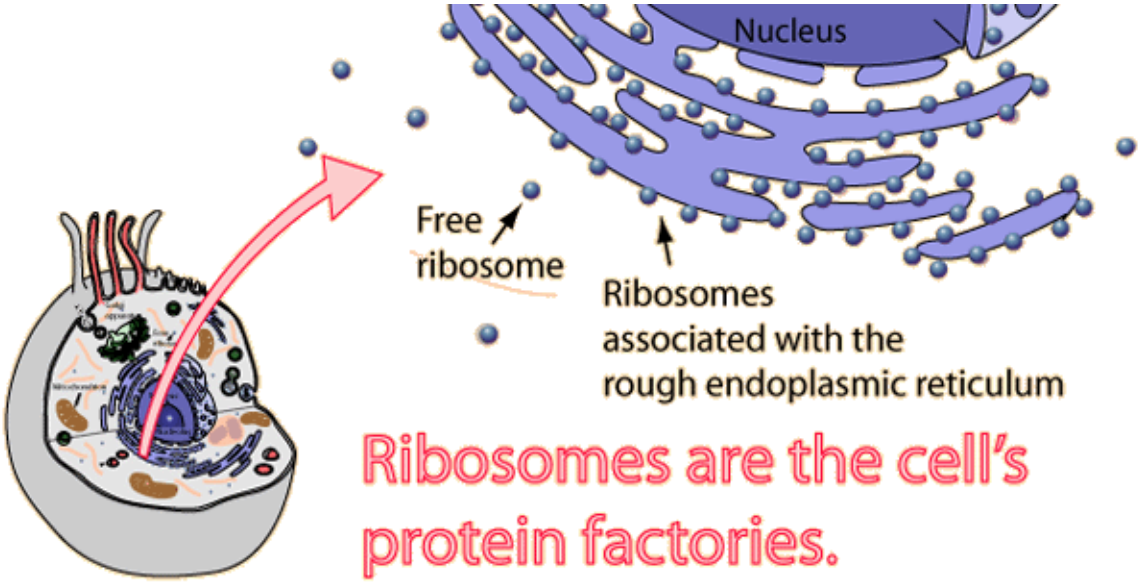


Mitochondria make energy for the cell in the form of ATP

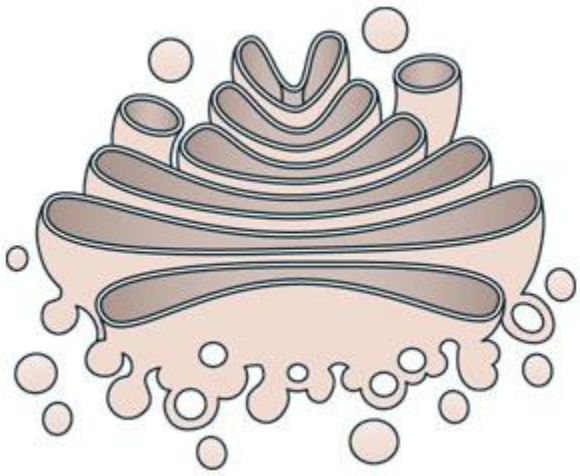
Known as the “powerhouse” of the cell



Ribosome builds/makes proteins

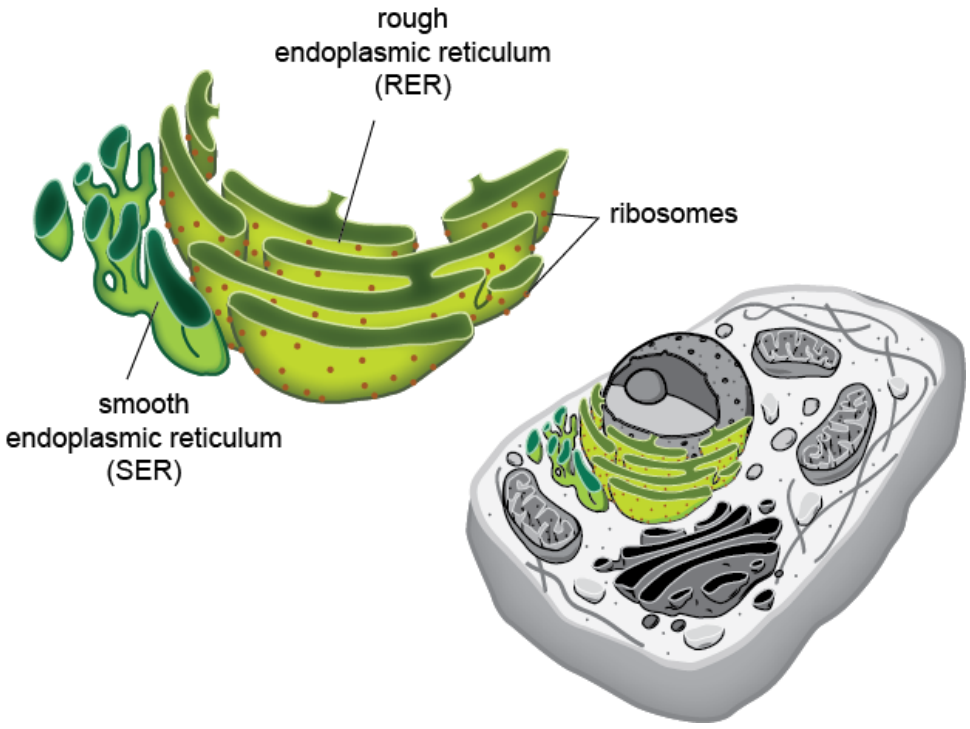


Golgi apparatus stores, packages and sorts proteins

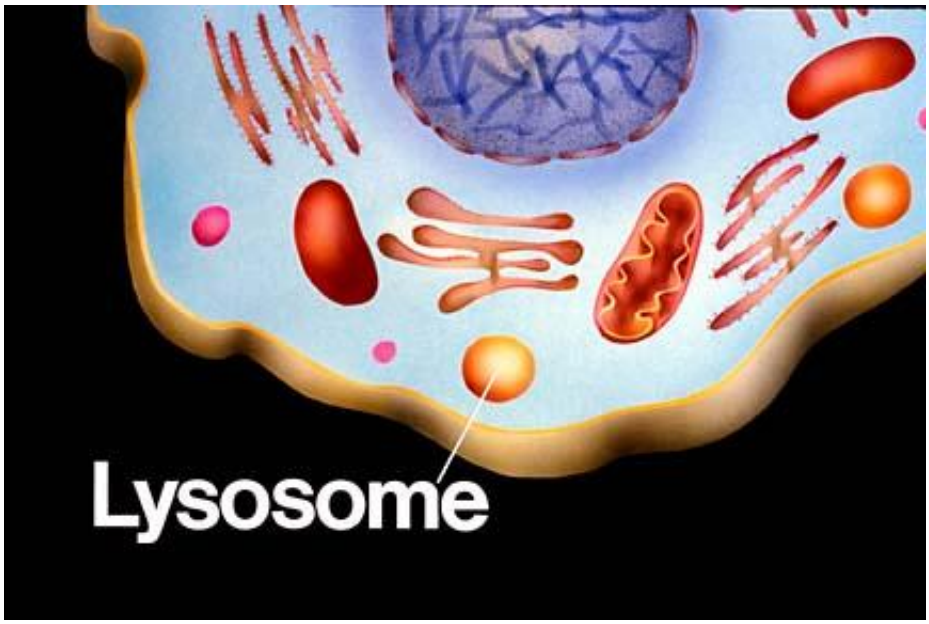


Endoplasmic reticulum (ER) a transport system for proteins within the cell

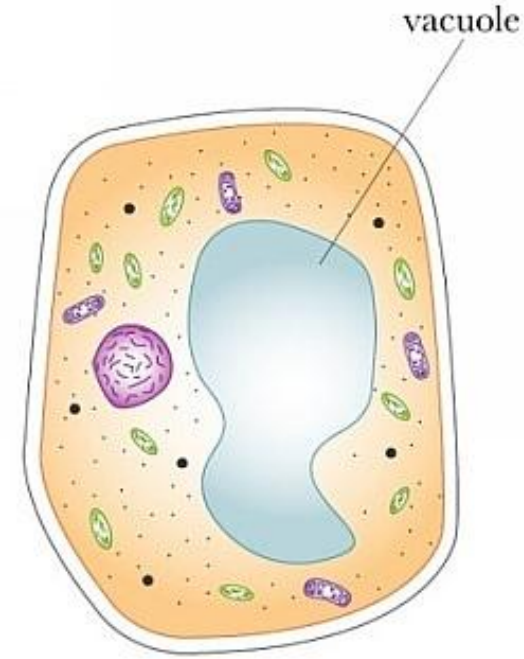
Two types:
•Rough endoplasmic reticulum (RER)—has ribosomes attached
•Smooth endoplasmic reticulum (SER)—no ribosomes attached



Lysosome digests and breaks down waste



Vacuole stores food, water and waste in the cell



Cells in Action

Process and Procedures

Part A: An Eggs-periment Date

Pages 213-219 Page #

1. Create a table to record your data.

2. What happened to the egg in regular water? Explain.

3. Draw and label a picture. Use arrows to show the movement of water.

4. What happened to the egg in the sugar water solution? Explain.

5. Draw and label a picture. Use arrows to show the movement of water.

Cells in Action

NEED TO KNOW: Background about Solutions

Date

Page 220 Page #

Solution homogeneous mixture of two or more substances

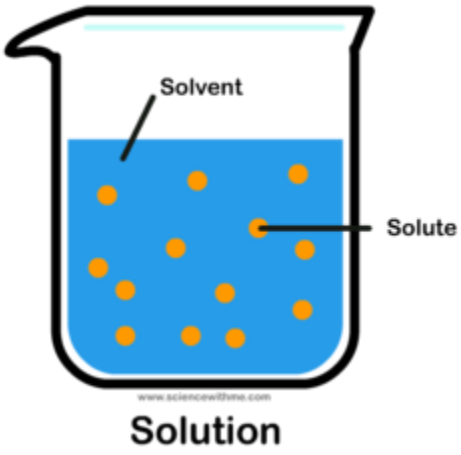
Solutions can be solids, liquids, gases or a combination of these

Solute the substance being dissolved

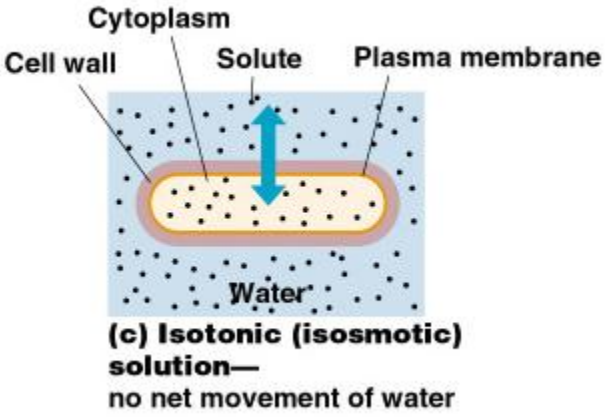
Examples: salt, sugar

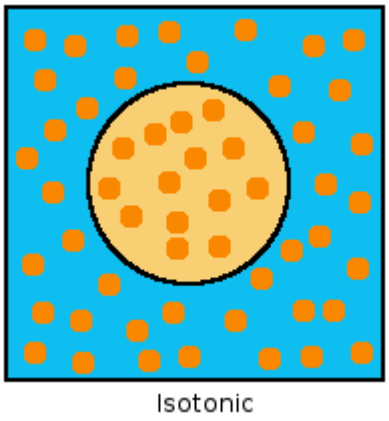
Solvent the substance that the solute is dissolved in

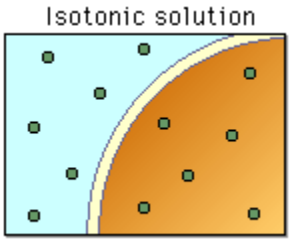
Example: water



Isotonic a solution where the concentration of solutes outside the cell equals the concentration of solutes inside the cell (iso = equal)

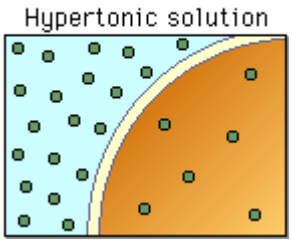


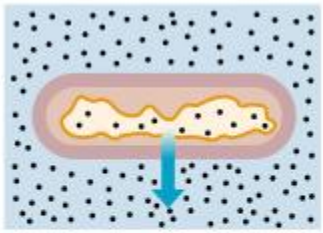




http://www.phschool.com/science/biology_place/biocoach/biomembrane1/isotonic.html

Hypertonic a solution where the concentration of solutes outside the cell is greater than the concentration of solutes inside the cell (hyper = over/more)



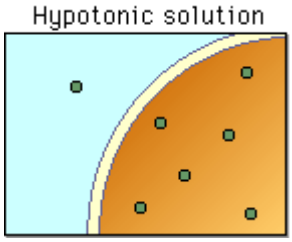


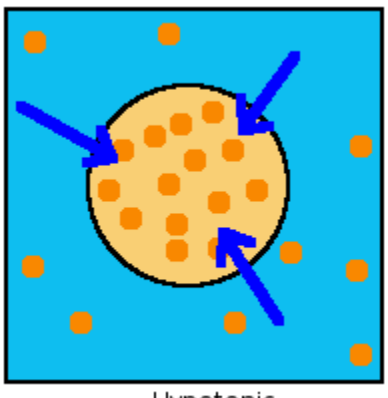
(e) Hypertonic (hyperosmotic) solution—
water moves out of the cell, causing its cytoplasm to shrink (plasmolysis)

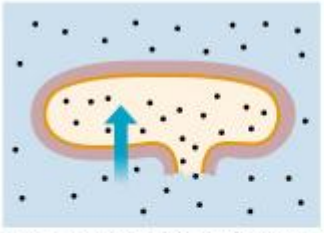
http://www.phschool.com/science/biology_place/biocoach/biomembrane1/hypertonic.html

http://www.phschool.com/science/biology_place/biocoach/biomembrane1/animals.html

Hypotonic — a solution where the concentration of solutes inside the cell is higher than the concentration of solutes outside the cell (hypo = under/less)







(d) Hypotonic (hypoosmotic) solution—water moves into the cell and may cause the cell to burst if the wall is weak or damaged (osmotic lysis)

http://www.phschool.com/science/biology_place/biocoach/biomembrane1/hypotonic.html

http://www.biology.emory.edu/multimedia/animation/blast!/osmosis.swf

http://www.phschool.com/science/biology_place/biocoach/biomembrane1/plants.html

Cells in Action

Process and Procedures

Part B: Observing Cell Activity Date

Pages 219-223 Page #

7. Make a **detailed** sketch of Cell 1 (plain onion).

9. Make a **detailed** sketch of Cell 1 (onion in salt water). Use arrows to show the direction of the water.

11. Write a caption under each sketch. Then write a paragraph that explains what happened in salt water. Use vocabulary terms!

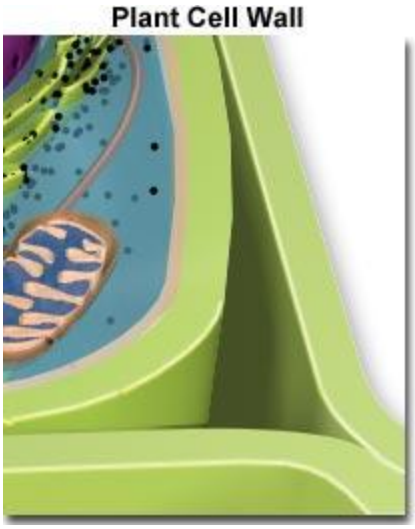
Plant cells are different from animal cells

Cell wall

a rigid covering that surrounds the cell membrane of plant cells

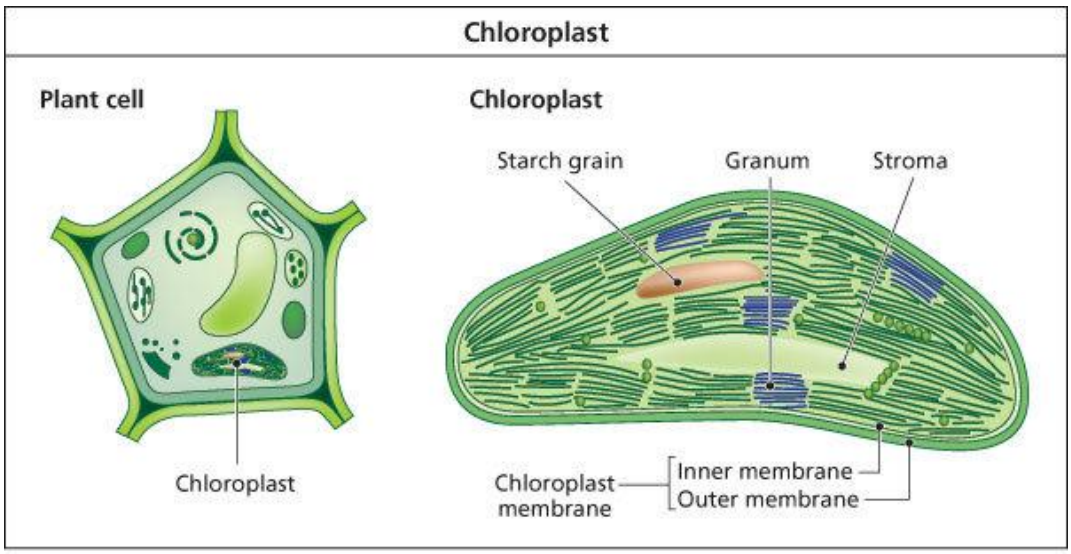
Is made mostly of cellulose

Provides extra support and structure



Chloroplast

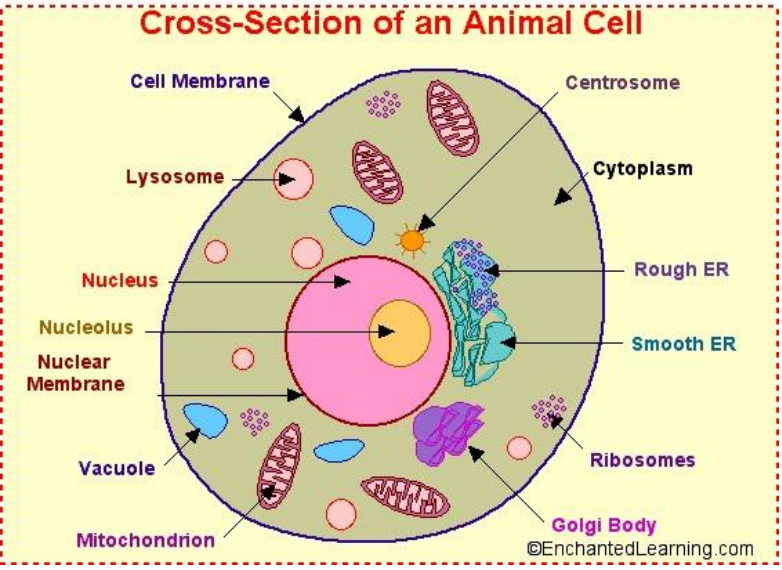
an organelle in plants that contains chlorophyll

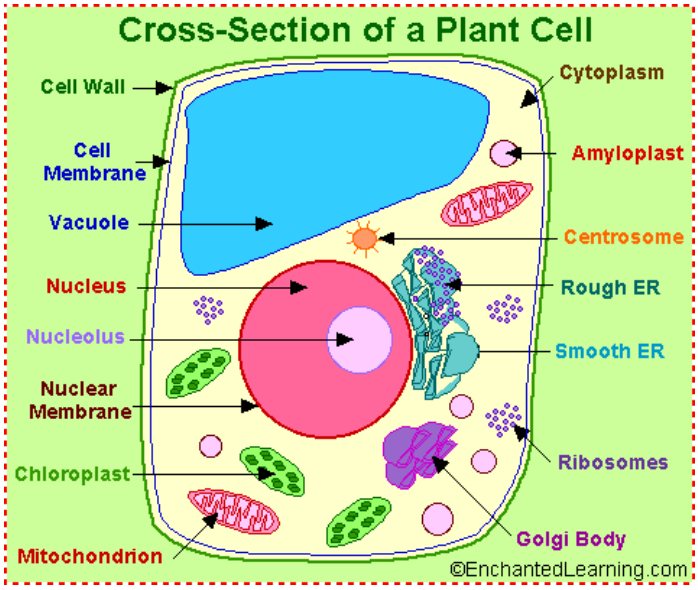


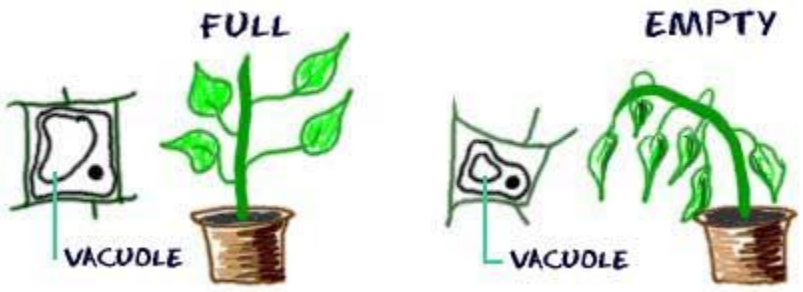
Chlorophyll — green pigment found in the chloroplasts of plant cells

Vacuoles — most plants cells have only one or two large vacuoles

Animal cells usually have many smaller vacuoles






FULL
VACUOLE
EMPTY
VACUOLE